BEFORE STARTING ENGINE

WORK SITE PRECAUTIONS

Before starting operations, thoroughly check the area for any unusual conditions that could be dangerous.

Check the terrain and condition of the ground at the work site, and determine the best and safest method of operation.

Make the ground surface as hard and horizontal as possible before carrying out operations. If there is a lot of dust and sand on the work site, spray water before starting operations.

If you need to operate on a street, protect pedestrians and cars by designating a person for work site traffic duty or by erecting fences and posting "No Entry" signs around the work site.

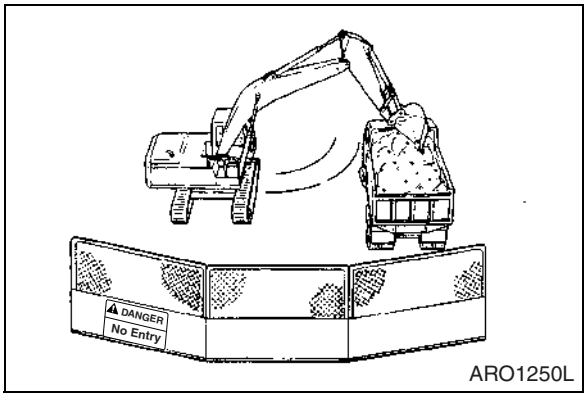


Figure 13

Erect fences, post "No Entry" signs, and take other steps to prevent people from coming close to or entering the work site. If people come close to a moving machine, they may be hit or caught by the machine, and this may lead to serious personal injury or death.

Water lines, gas lines, phone lines and high-voltage electrical lines may be buried under the work site. Contact each utility and identify their locations. Be careful not to damage or cut any of these lines.

Check the condition of the river bed, and the depth and flow of the water before operating in water or crossing a river. NEVER be in water that is in excess of the permissible water depth.

Any type of object in the vicinity of the boom could represent a potential hazard, or cause the operator to react suddenly and cause an accident. Use a spotter or signal person working near bridges, phone lines, work site scaffolds, or other obstructions.

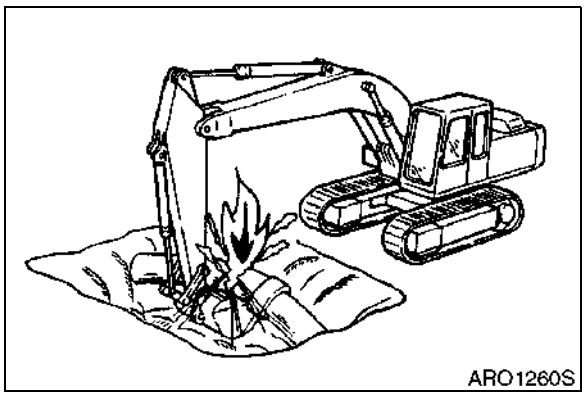


Figure 14

Fatigue Spalling

Flaking of surface metal resulting from fatigue.

Replace bearing - clean all related parts.

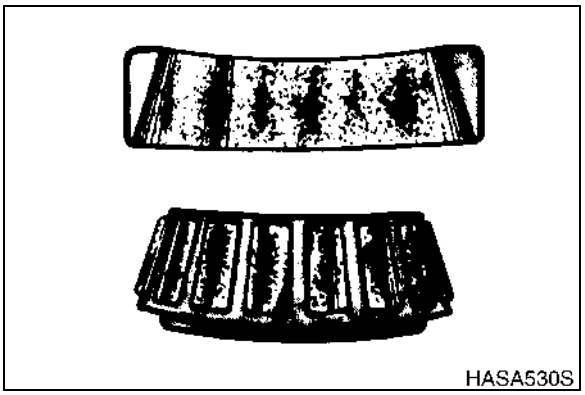


Figure 10

Brinelling

Surface indentations in raceway caused by rollers either under impact loading or vibration while the bearing is not rotating.

Replace bearing if rough or noisy.

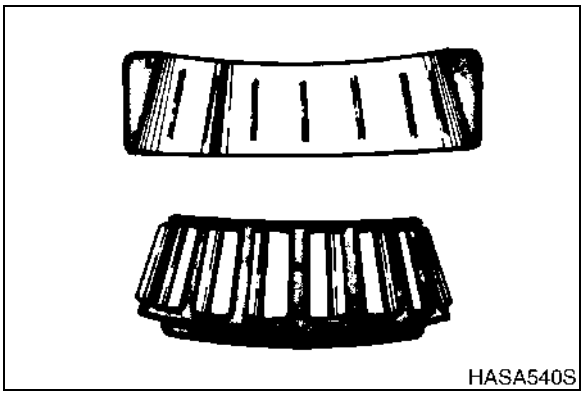


Figure 11

Cage Wear

Wear around outside diameter of cage and roller pockets caused by abrasive material and inefficient lubrication.

Replace bearings - check seals.

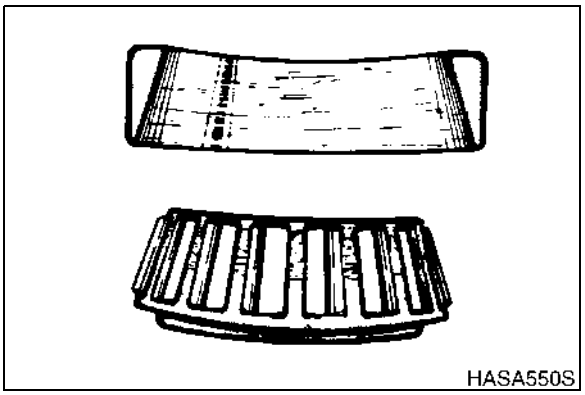


Figure 12

Abrasive Roller Wear

Pattern on races and rollers caused by fine abrasives.

Clean all parts and housings, check seals and bearings and replace if leaking, rough or noisy.

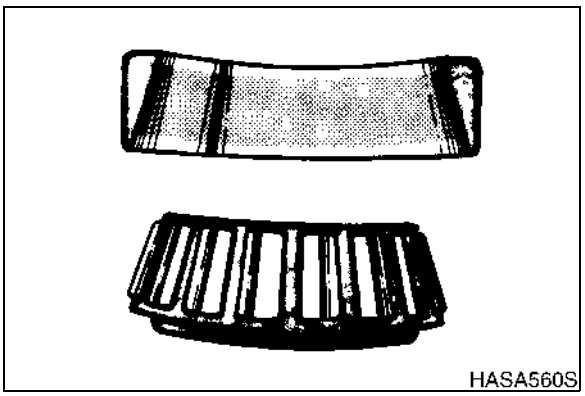


Figure 13

12. Remove floor mat.
13. Remove operator's seat (1, Figure 2).

    NOTE: *Be careful not to damage seat covering.*

14. Remove duct covers (2, 3 and 4, Figure 2). When removing cover (2) disconnect hour meter connector and cigar lighter connector. Disconnect main harness connector before removing cover (4).
15. Remove pocket (5, Figure 2) before removing side panel (6, Figure 2).

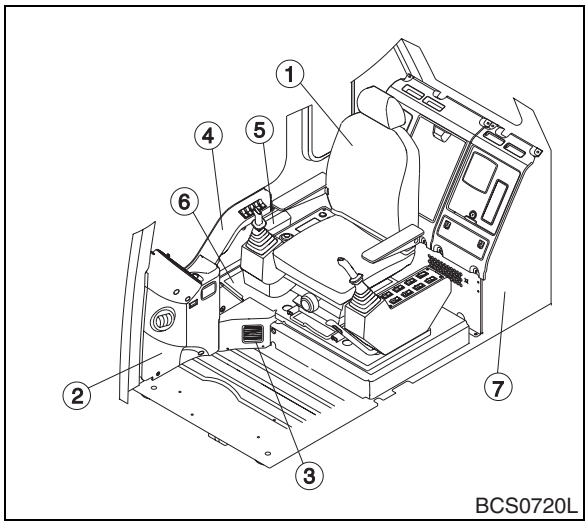


Figure 2

16. Remove air duct (1, 2 and 3, Figure 3) located at right side of cab. Disconnect duct wiring connector before removing duct (2).
17. Disconnect washer hose located at floor plate bottom.

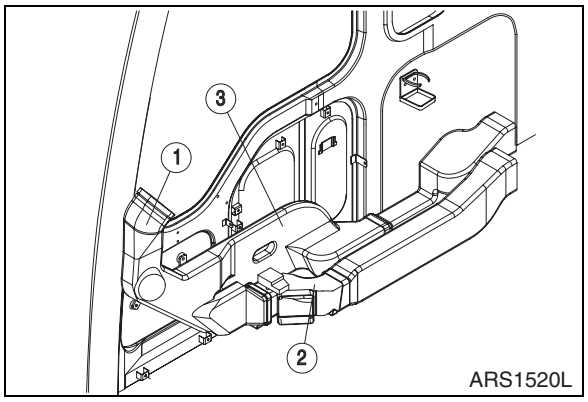


Figure 3

18. Remove cover (5, Figure 4) on left side dash cover (3) and bolts (1, Figure 5).

    NOTE: *When removing cover disconnect speaker wire.*

19. Remove two rubber stops (2, Figure 4) used in storing the front lower glass. Remove bolts (1) from the rear left and right dash covers. Remove left side cover (3).
20. Lift right side dash cover (4, Figure 4) and disconnect speaker wire. Remove cover.

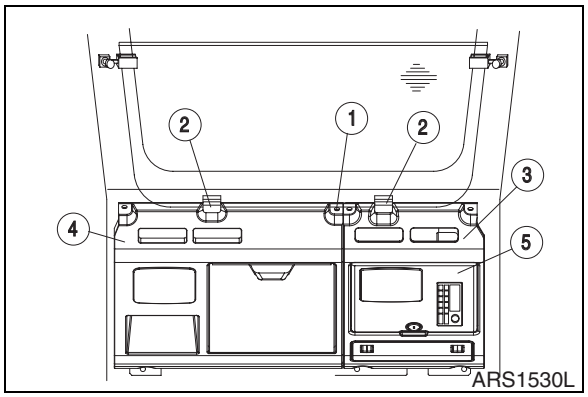
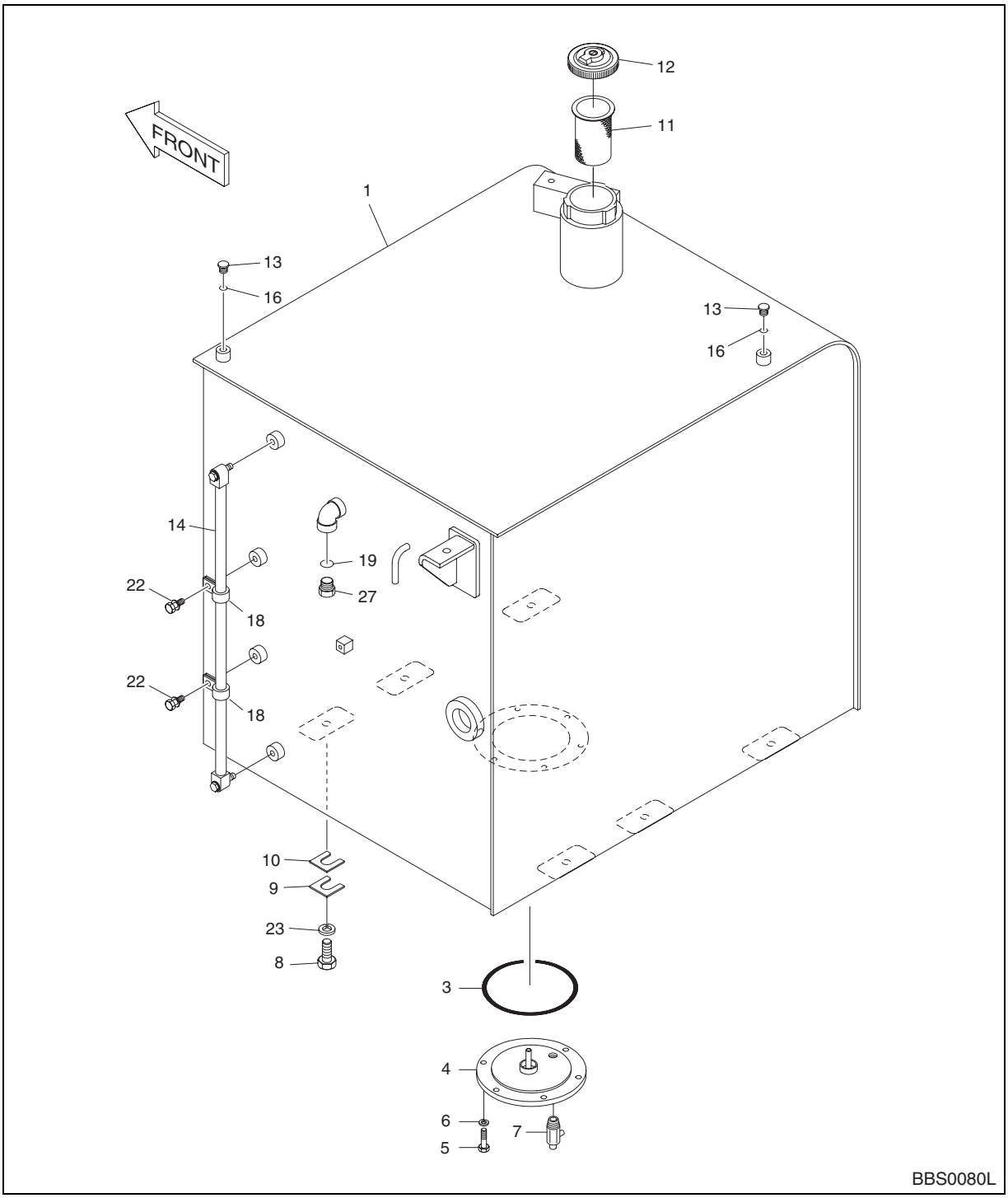


Figure 4


FRONT
12
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BBS0080L

Figure 1

SWING BEARING MAINTENANCE

OPERATING RECOMMENDATION

The service life of the swing bearing may be extended if a conscious, daily effort is made to equalize usage over both ends of the excavator. If the excavator is used in the same operating configuration day in and day out (for example, with the travel motors always under the counterweight, or with the attachment over one side of the machine more than the other), the bearing's service life could be reduced. Taking a few minutes in the middle of each work shift to reposition the excavator, to work the opposite end of the bearing, will provide a payoff in terms of more even, gradual rate of wear and extended service life.

MEASURING SWING BEARING AXIAL PLAY

Periodic, regular checks of bearing displacement should be made at least twice a year. Use a dial indicator. Push the attachment against the ground to lift the excavator off the ground and take measurements at 4 points, 90° apart, around the circumference of the bearing (Figure 1).

Record and keep all measurements. Play in the bearing should increase minimally from one inspection to the next. Eventually, however, as the bearing begins to approach the limit of its service life, clearance increases become much more pronounced and the actual measured play in the bearing could exceed twice the value that was measured when the machine was new.

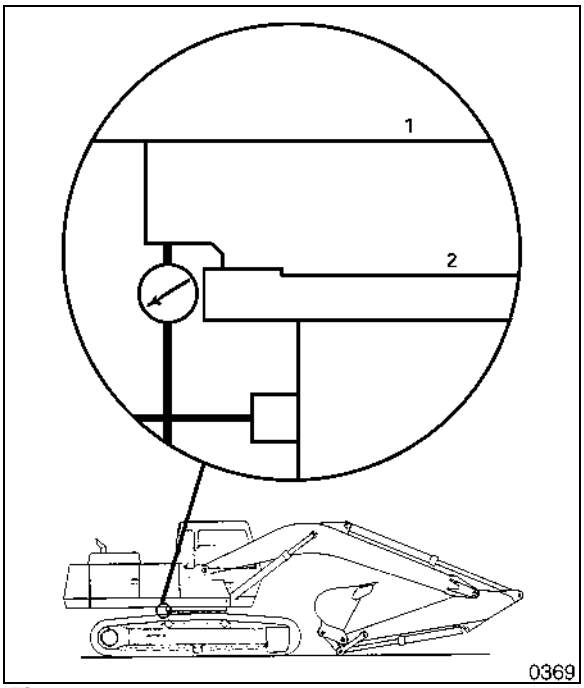

Figure 1

MEASURING BEARING LATERAL PLAY

When vertical checks are made, the side-to-side play in the bearing can be checked by fully retracting the arm and bucket cylinders and extending the tip of the bucket as far forward as it will go. With the excavator parked on a flat, level surface and the bucket tip just off the ground, push against the bucket sideways to take up all of the lateral clearance in the bearing. (Less than 100 lb of force should be required to move the bucket over all the way.) Check lateral play in both directions and record the values. When the bearing is beginning to approach the end of its service life, measured lateral clearance should start to show larger and larger increases.

7. Install 10 mm ring bolts and use them to lift out and separate the No. 2 carrier assembly.

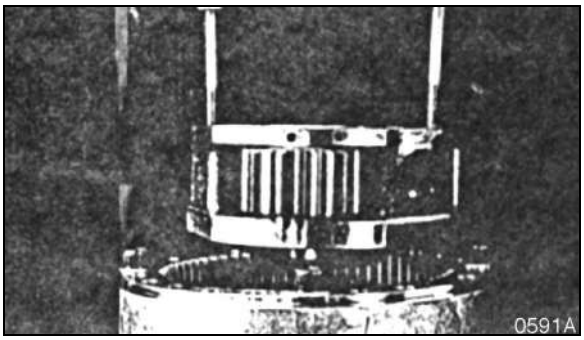

Figure 14

8. Remove the thrust ring, in order to begin disassembly of the No. 2 carrier. Position the carrier vertically, as shown in the photograph. Insert an appropriate tool through the hole in the back side of the carrier. Hammer out the spring pin (31), so that pin No. 2 (14) can be withdrawn. Remove the upper and lower (18, 19) side plates of the differential gears.

Figure 15

IMPORTANT

Pin No. 2 should not be reused. Replace it with a new component. Further disassembly of the carrier is generally not required, unless there is evidence of unusual damage or excessive wear.

9. Disassemble the ring gear. Tighten two 16 mm bolts into the holes shown in the photograph. Separate the ring gear using even force.

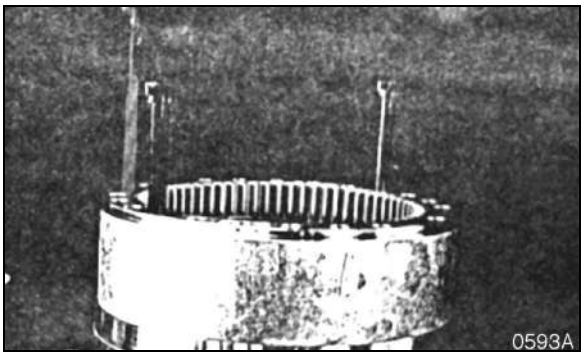

Figure 16

10. Before turning the gearbox end for end (180°, so that the drive shaft is facing up, as shown in the photograph) remove the 4 pipes and lock pins (21). Lock pins (21) should not require further disassembly. Loosen the mounting bolts (26) and detach the front cover plate (1).

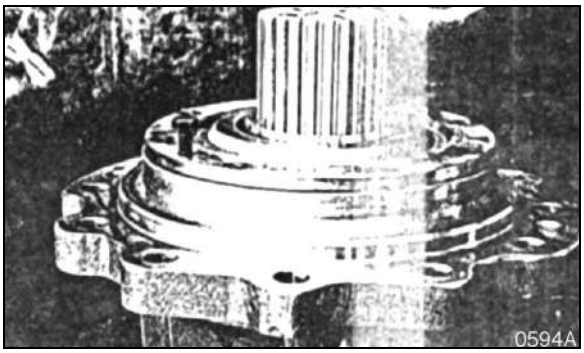

Figure 17

Component / Reference Dimensions	Reference	Normal (New) Dimension	Recommended Limit for Maintenance	Limit for Use (Repair - P or Replace - R)
Track link, master pin bushing, master bushing	A	59.0 mm (2.32 in)	57.0 mm (2.24 in)	54.0 mm [R] (2.13 in)
	B	38.0 mm (1.50 in)	40.0 mm (1.57 in)	41.0 mm (1.61 in)
	C	38.0 mm (1.50 in)	35.0 mm (1.38 in)	34.0 mm [R] (1.34 in)
	D*	37.83 mm (1.49 in)	35.0 mm (1.38 in)	34.0 mm [R] (1.34 in)
	* Master pin			

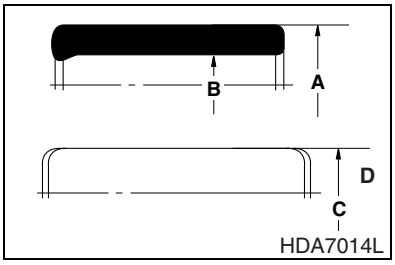

Figure 6

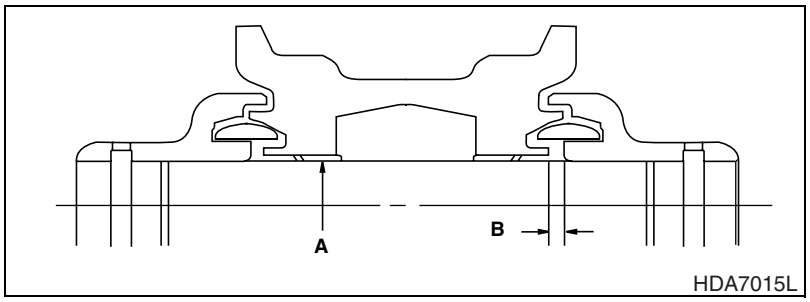

Figure 7

Lower roller, axle	A	70 mm (2.756 in)	68.60 mm (2.70 in)	68.30 mm [R] (2.69 in)
Lower roller, bushing	A	70 mm (2.756 in)	70.5 mm (2.776 in)	70.70 mm [R] (2.78 in)
Axle-bushing, clearance			1.0 mm (0.039 in)	1.50 mm (0.06 in)
Gap between bushing and side collar. (Total amount for both sides.)	B		1.0 mm (0.039 in)	1.80 mm (0.07 in)
Flange thickness	B	4.30 mm (0.17 in)	3.80 mm (0.15 in)	3.50 mm (0.14 in)

Lower roller dimensions	A	217.0 mm (8.54 in)		
	B	17.80 mm (0.70 in)		4.50 mm [P] (0.18 in)
	C	160.0 mm (6.30 in)	154.0 mm (6.06 in)	150.0 mm [P] (5.91 in)
	D	195.0 mm (7.68 in)	190.0 mm (7.48 in)	185.0 mm [P] (7.28 in)

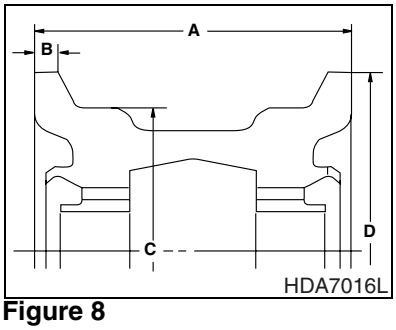

Figure 8

UPPER ROLLER

PARTS LIST

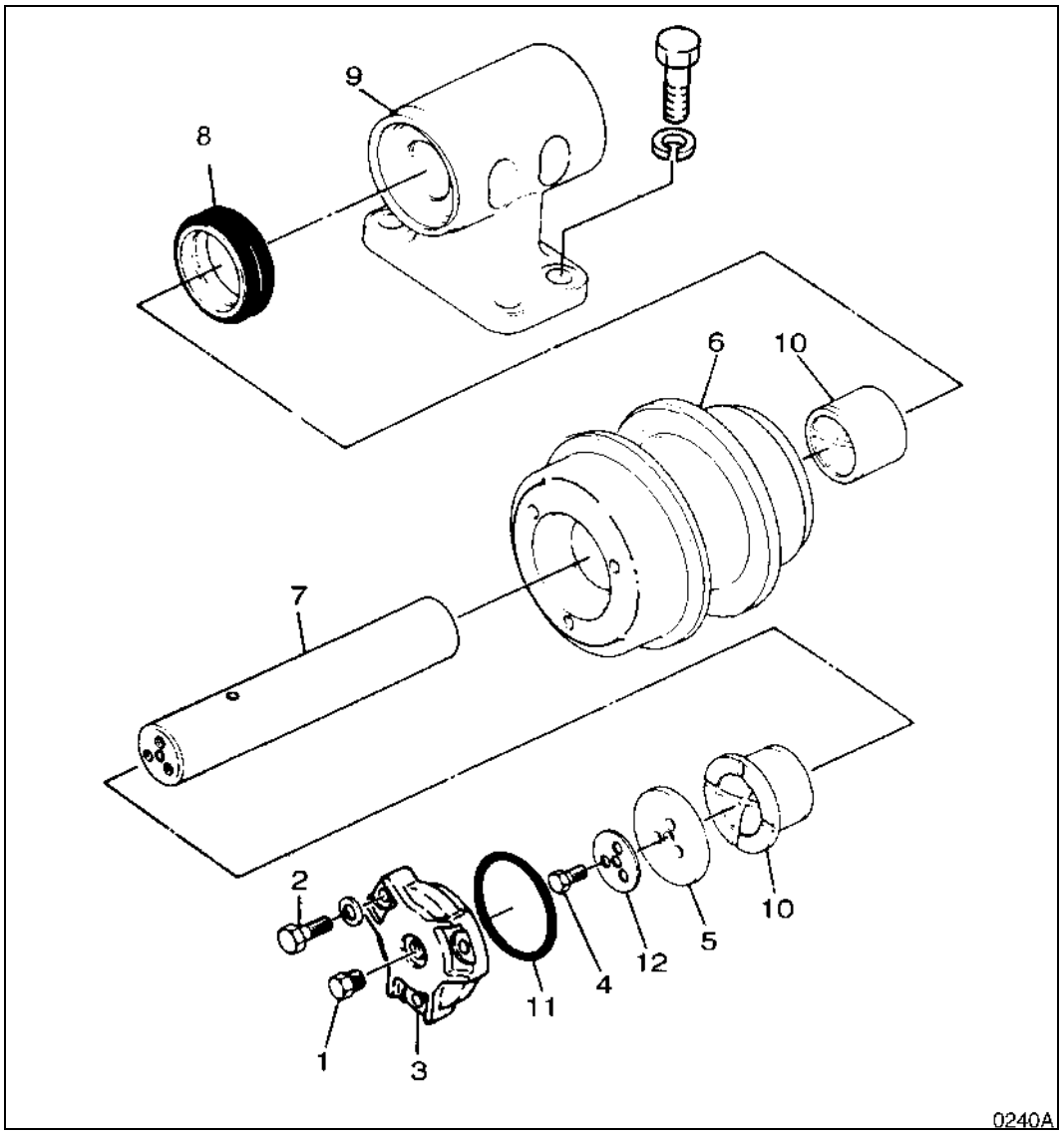

Figure 39

Reference Number	Description
1	Plug
2	Bolt
3	Cover
4	Bolt
5	Washer
6	Roller

Reference Number	Description
7	Axle
8	Group Seal
9	Bracket
10	Bushing
11	O-ring
12	Lock Washer

DRIVE COUPLING INSTALLATION

Whenever the drive coupling for main pump is installed, the following mounting dimensions and installation procedures must be observed.

NOTE: *If these procedures are not followed, noise will occur and/or the service life of drive coupling or main pump will be reduced.*

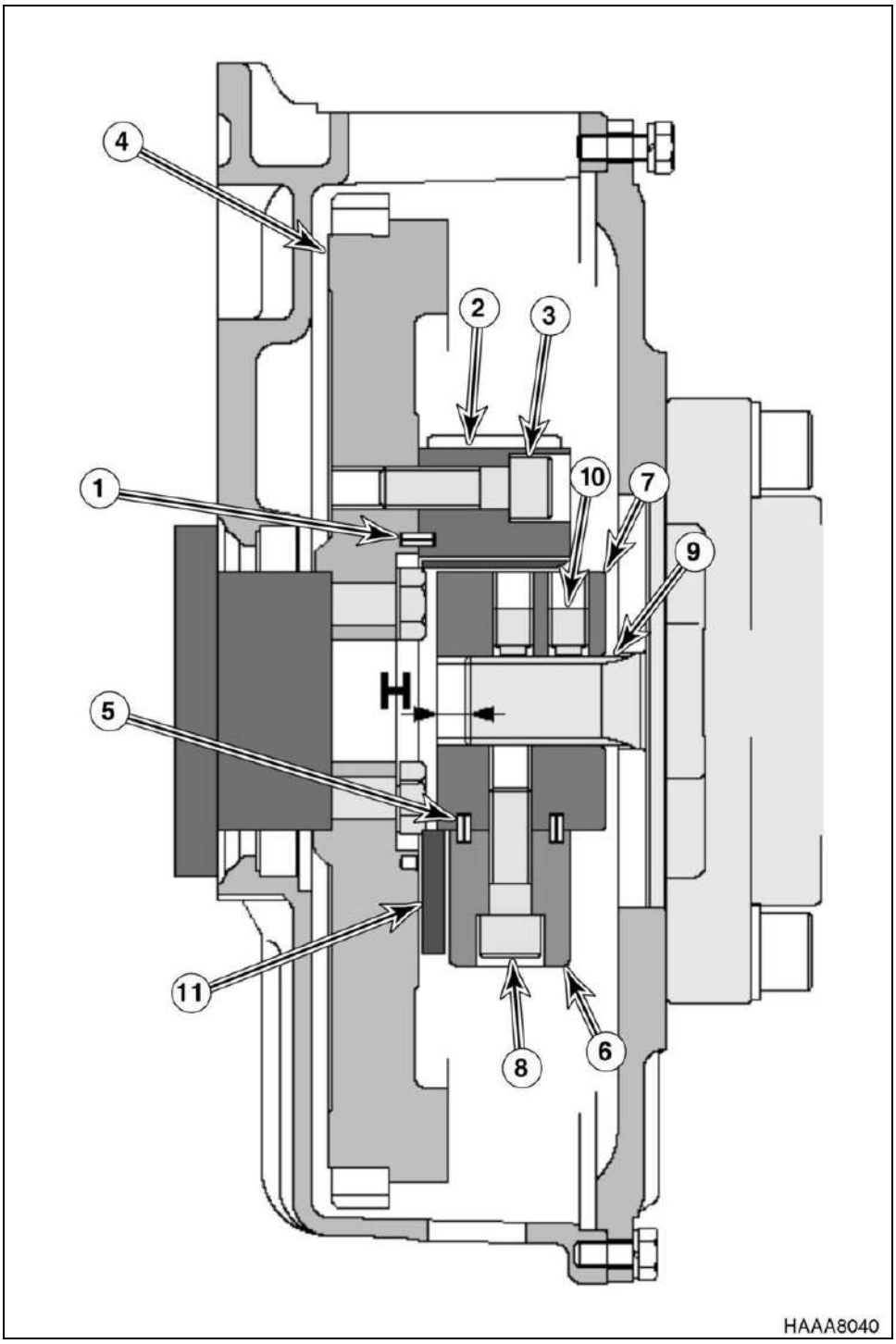

Figure 9 DRIVE COUPLING INSTALLATION (KAWASAKI / TONG MYUNG PUMP)

HYDRAULIC SYSTEM - GENERAL NOTES

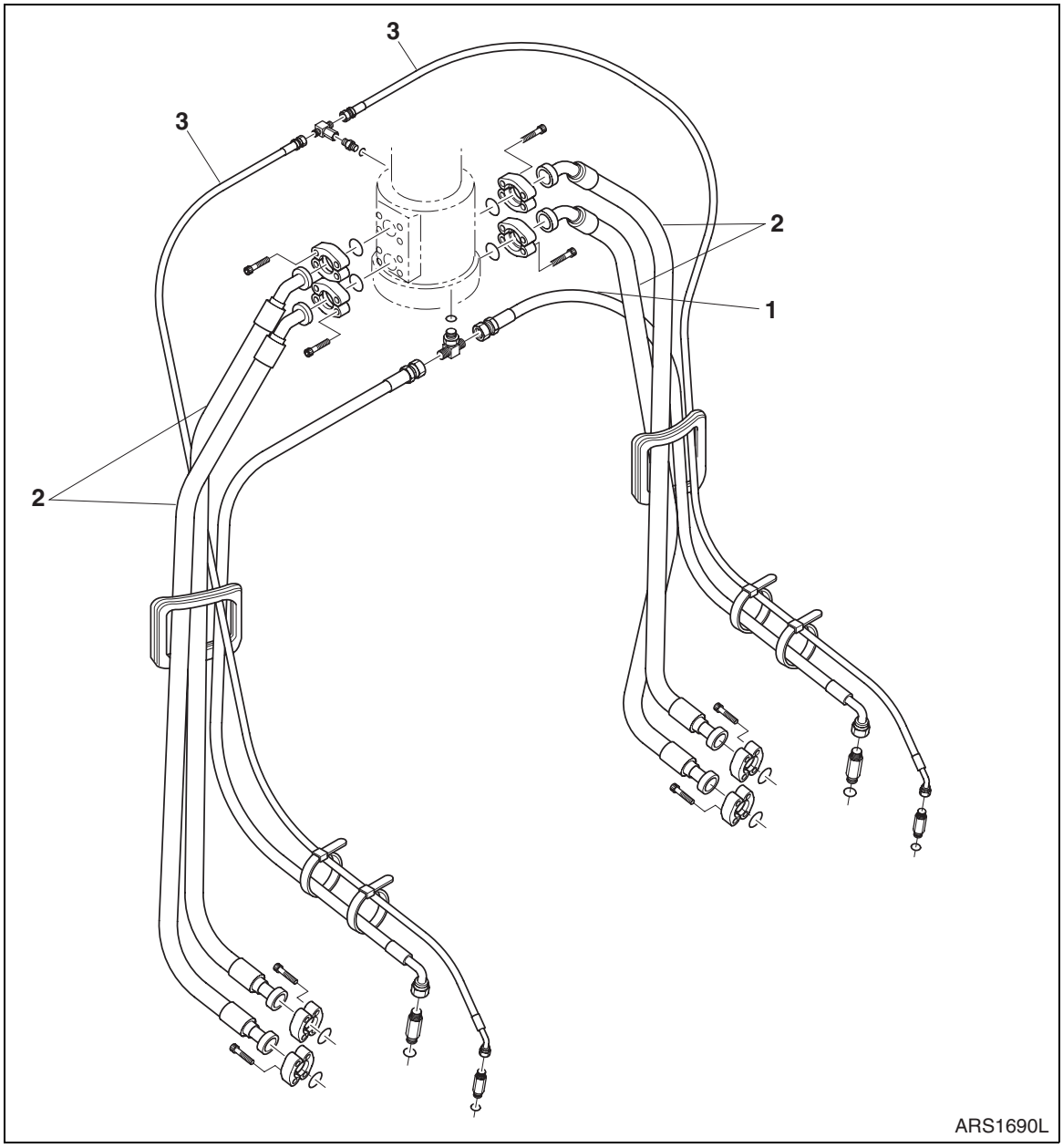

Figure 1

The hydraulic system has several improvements over conventional hydraulic systems - including cross-sensing total horsepower control - to maximize output efficiency.

The system features an electronically controlled output optimization system, which allows the operator to choose between two, distinctly different power modes: high-output/rapid cycling maximum-speed power mode, and a standard power mode for most types of general operation.

Electronic management of hydraulic control valves assists in optimizing the application speed and overall operator control of hydraulic actuators and functions.

GENERAL DESCRIPTION

The accumulator is a gas-charged storage device designed to hold a reserve quantity of hydraulic fluid under pressure. Accumulators are used in hydraulic circuits in much the same way that condensers (or capacitors) are used to collect, store and maintain electrical charge in a circuit.

In a hydraulic circuit, minor variations or lags in pump output that might otherwise cause unsteady or irregular operation are made up from the supply of pressurized oil in the accumulator.

Reference Number	Description
1	Screw Plug
2	Steel Pressure Vessel
3	Diaphragm
4	Fluid Valve

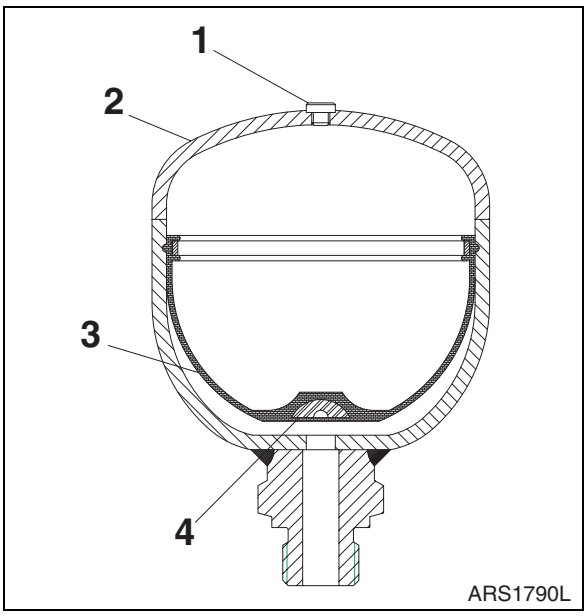

Figure 1

Accumulators are solidly constructed to resist the high operating pressures of the fluids they contain. There are only three main moving parts: a plug at the top allows pre-charging or expelling gas from the compressible, pre-charged upper chamber; a valve assembly at the bottom of the accumulator for passing hydraulic fluid in and out, and an elastic diaphragm to separate the two chambers. The flexible diaphragm changes shape to conform to the changing pressures and volumes of the two fluids in the upper and lower chambers.

There are six possible positions the diaphragm can be in and they are as follows:

1. With no gas charge in the upper chamber 0 bar (0 psi, empty) and no oil in the bottom 0 bar (0 psi, dry) the elastic diaphragm hangs loosely.
2. When the pre-pressure charge of gas (usually nitrogen) is introduced through the port at the top of the accumulator, the diaphragm expands to maximum size. The valve button in the center of the diaphragm pushes into the fluid opening in the bottom chamber, sealing off the lower valve. If the pressure of the gas charge exceeds system oil pressure, no fluid enters the accumulator. The button also keeps the diaphragm from protruding into the lower valve opening.

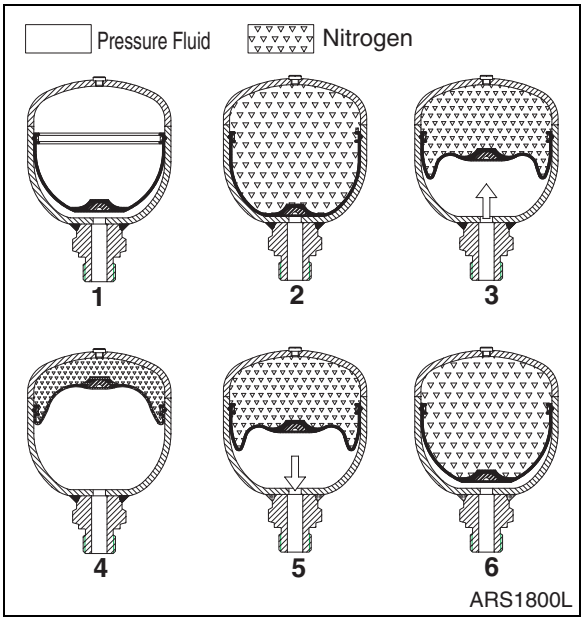

Figure 2

MODEL	CYLINDER	A (±0.1)	øB	øC	øD	MODEL (CYLINDER)
S55	BOOM	80.0 mm (3.15 in)	11.0 mm (0.43 in)	45.0 mm (1.77 in)	110.0 mm (4.33 in)	S55 (BOOM (OP)) S55W-V (BOOM)
	SWING	58.0 mm (2.28 in)	11.0 mm (0.43 in)	38.0 mm (1.50 in)	80.0 mm (3.15 in)	MEGA 300 (P/S)
S55-V PLUS	ARM	65.0 mm (2.56 in)	11.0 mm (0.43 in)	49.0 mm (1.93 in)	90.0 mm (3.54 in)	MEGA 130-III (LIFT) MEGA 160TC (BUCKET) MEGA 400 (P/S)
S70-III	ARM	70 mm (2.76 in)	11 mm (0.43 in)	51 mm (2.01 in)	95 mm (3.74 in)	S80W-II (ARM)
	BUCKET	60 mm (2.36 in)	11 mm (0.43 in)	43 mm (1.69 in)	85 mm (3.35 in)	S80W-II (BUCKET, DOZER) S75-V (BUCKET)
	DOZER	70 mm (2.76 in)	11 mm (0.43 in)	53 mm (2.09 in)	95 mm (3.74 in)	S75-V (ARM, DOZER) S130LC-V (DOZER) S140W-V (DOZER) S160W-V (DOZER)
S220LC-V	ARM	110 mm (4.33 in)	13 mm (0.51 in)	76 mm (2.99 in)	140 mm (5.51 in)	S210W-V (ARM) S220LC-V (BOOM) S220N-V (ARM (OP)) S225NLC-V (BOOM) S225NLC-V (ARM (OP)) S250LC-V (ARM) S255LC-V (ARM) S290LC-V (BOOM, BUCKET) S300LC-V (BOOM, BUCKET)
	BUCKET	90 mm (3.54 in)	11 mm (0.43 in)	63 mm (2.48 in)	115 mm (4.53 in)	S70-III (BOOM) S75-V (SWING) S80W-II (BOOM) S130W-V (ARM (EURO)) S130LC-V (S/ARM, BOOM (OP), ARM) S160W-V (ARM) S170LC-V (BOOM) S170W-V (BUCKET, BOOM) S180W-V (BOOM) S210W-V (BUCKET) S220LC-V (BUCKET) S225LC-V (BUCKET) S225NLC-V (BUCKET) MEGA 200-III (LIFT)
S290LC-V	ARM S/ARM	120 mm (4.72 in)	13 mm (0.51 in)	85 mm (3.35 in)	150 mm (5.91 in)	S290LL (BUCKET, BOOM) S300LC-V (ARM, S/ARM) S330LC-V (BOOM, BUCKET) S340LC-V (BUCKET, BOOM, BUCKET (OP)) S370LC-V (BUKCET, BUCKET (OP))
S330LC-V	ARM	130 mm (5.12 in)	13 mm (0.51 in)	93 mm (3.66 in)	165 mm (6.50 in)	S140W-V (ARTI) S160W-V (ARTI) S340LC-V (ARM) S400LC-V (ARM, BOOM) S420LC-V (ARM, BOOM, BUCKET) S450LC-V (BOOM, BUCKET) S470LC-V (BOOM, BUCKET)

DISASSEMBLY

⚠ CAUTION!

Vent air from the hydraulic system before disconnecting cylinder piping connections. Use the lever on the reservoir, while the engine is running. Discharge the hydraulic accumulator and vent residual tank pressure after the engine is shut off. Pour clean replacement fluid back into the system if excessive fluid is lost.

1. Following removal of cylinder from excavator attachment, support cylinder on some type of sturdy work platform and drain all oil. Rotate cylinder so that piping ports are on top, to allow trapped air to vent.

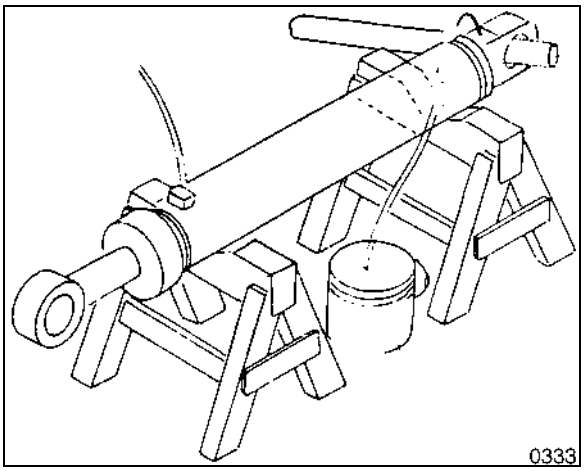

Figure 12

2. Position piston rod so that it is extended approximately one half meter (20").

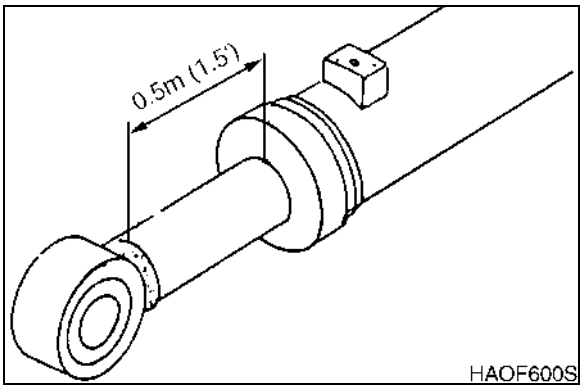

Figure 13

3. Remove bolts (7) on the end of cylinder.

   NOTE: *Wrap a cloth or other protective material around piston rod, to avoid possibility of accidentally scratching or scoring rod surface while fasteners are being loosened and removed. Component parts (numbered in parentheses) are keyed to Figure 4.*

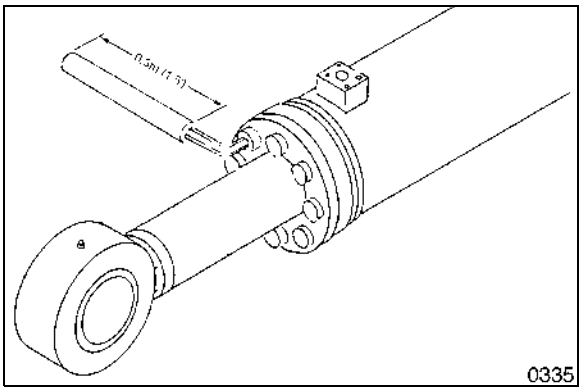

Figure 14

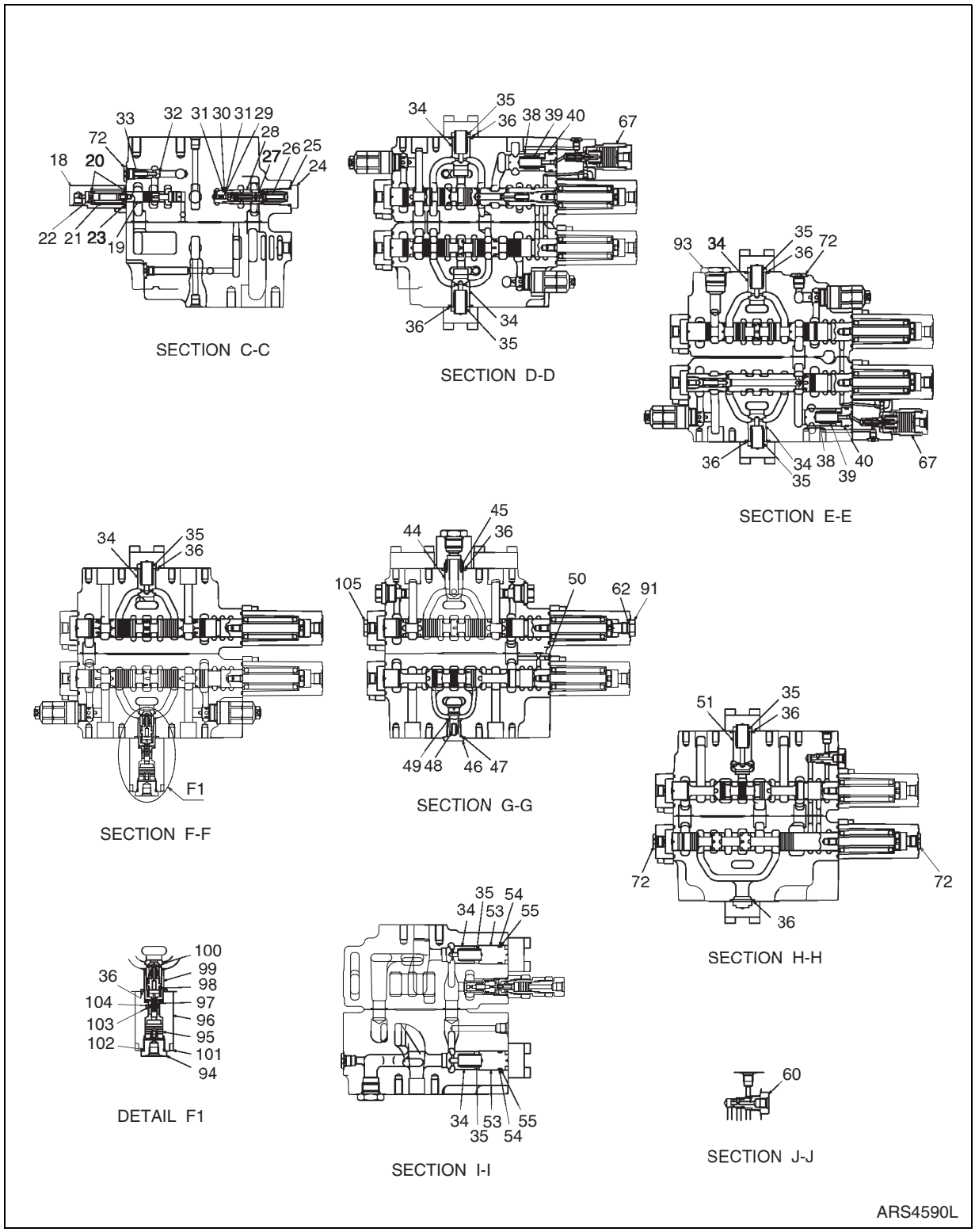
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
DETAIL F1
SECTION I-I
SECTION J-J
ARS4590L

Figure 34

GENERAL DESCRIPTION

Schematic(s) presented in this section are laid out on facing pages.

An overlapping edge has been taken into consideration so that a photocopy can be made and pasted together to make a complete schematic.

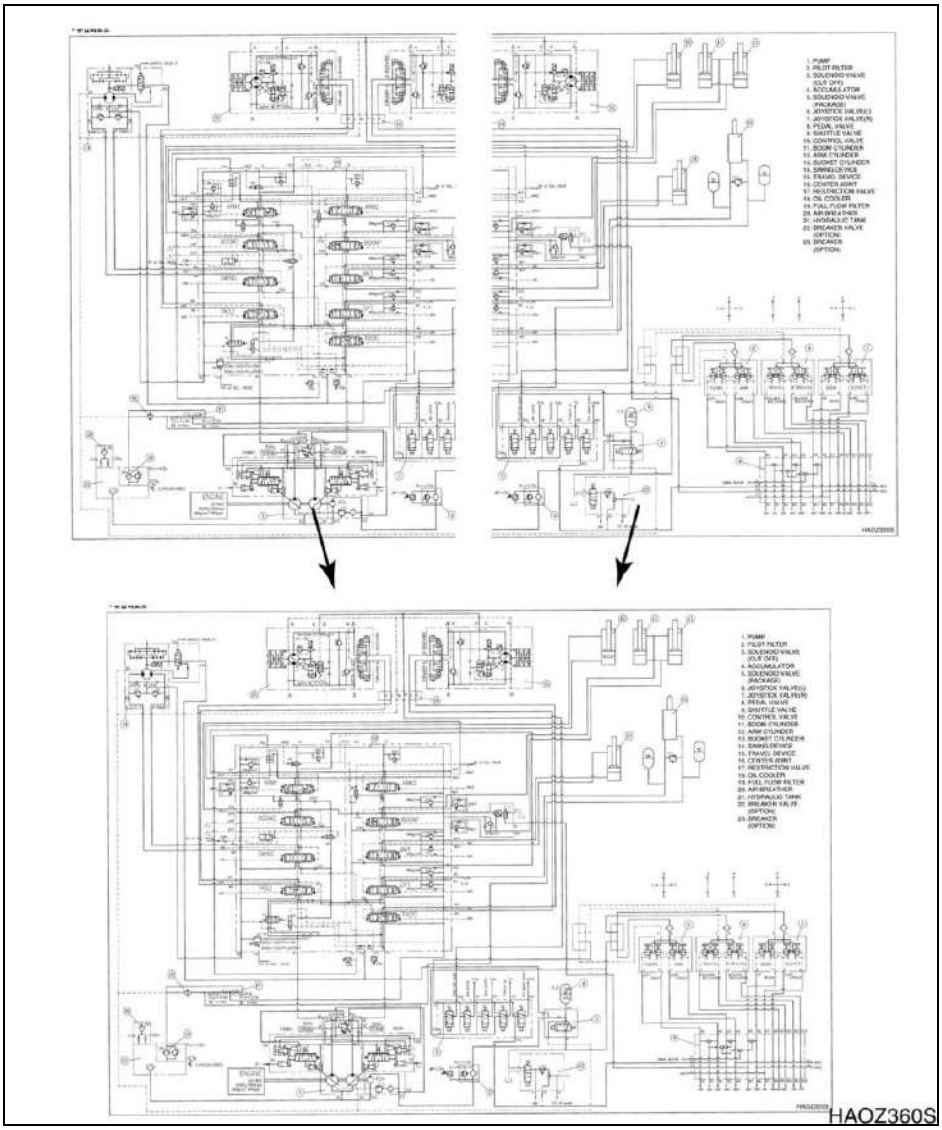

Figure 1